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United States Environmental Protection Agency
Enforcement and Compliance Assurance (2201)
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Summer 1995

EPA

Superfund At Work

Hazardous Waste Cleanup Efforts Nationwide

Fisher-Calo Site Profile

Site Description: Three separate areas of an industrial park

Site Size: Approximately 400 acres

Primary Contaminants: Volatile organic compounds (VOCs), polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs)

Potential Health Effects: Central nervous system disorders, increased risk of cancer

Nearby Population: 3,700 people within a four-mile radius

Ecological Concerns: Wetlands, prairie, and wildlife including endangered species

Year Listed on NPL: 1983

Region: 5

State: Indiana

Congressional District: 3

Success in Brief

Innovative Technologies Applied to Soil and Ground Water

In 1978, a powerful chemical blast rousted thousands of residents from their beds in LaPorte County, Indiana. Noxious fumes and soot drifted as far as five miles away from where the Fisher-Calo Chemical and Solvent Company operated a hazardous waste facility. The ensuing blaze consumed 20,000 barrels of solvents, metal plating sludges, and caustic solutions, but at least 5,000 more tanks and drums remained buried beneath the rubble.

Since then, a team of dedicated specialists has used the Superfund program to rectify the chaos caused by gross mismanagement of this facility. Led by the U.S. Environmental Protection Agency (EPA), a number of innovative technologies are at work on significant sources of contamination. Together with the Indiana Department of Environmental Management, EPA:

- negotiated agreements with waste contributors for comprehensive cleanup of soil and area ground water worth $30 million; and
- engineered the purchase of adjacent land to replace a sensitive prairie and wetlands ecosystem of unlimited value.

State and federal cooperation at the site has made this challenging remediation a Superfund success. The next three years will involve major cleanup efforts expected to be completed in 1998; ground water monitoring will continue for 30 years.

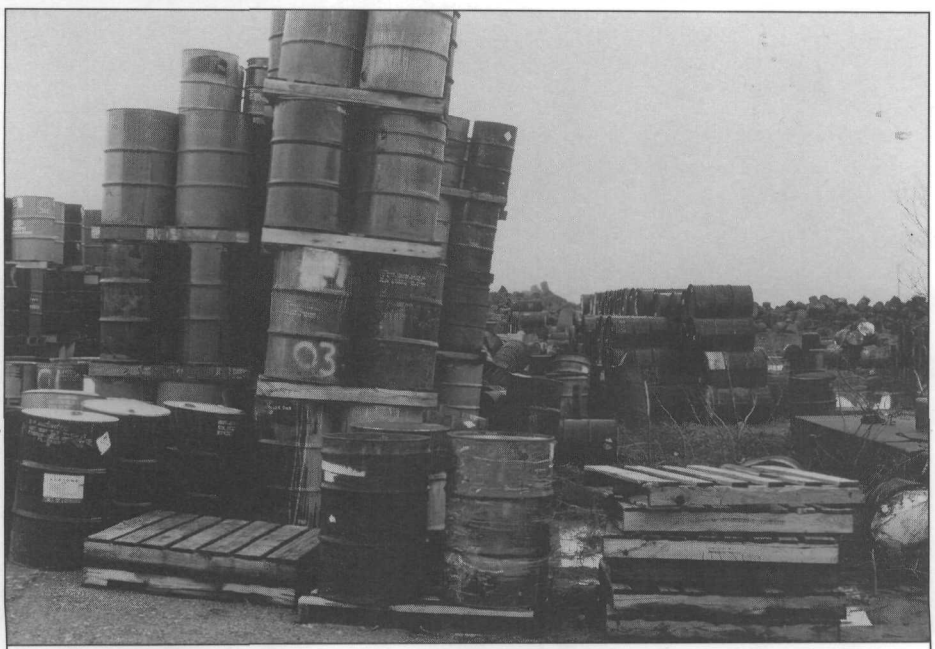


Photo by Jim Hunt, Indiana State Board of Health

Following the 1978 fire, hundreds of surface drums remained at the One-Line Road facility.

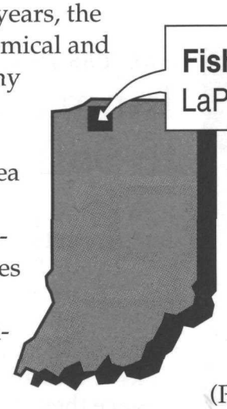
The Site Today

Site managers used soil vapor extraction technology to treat contaminants at several areas last year. Efforts are under way to quantify the amount of soil requiring excavation. A ground water treatment plant is planned for construction following characterization of four separate contaminant plumes. This phase of the project will likely start up in 1996.

A Site Snapshot

The 400-acre Fisher-Calo site is in the upper northwest corner of the state of Indiana, roughly 25 miles from Lake Michigan. The site abuts the Kingsbury Fish and Wildlife Area and is part of a much larger prairie and wetlands ecosystem that supports a variety of wildlife including several endangered species.

Kingsford Heights, a residential subdivision for 1,400 people, is less than two miles south. Another 3,700 people live within four miles of the site; all are on a different municipal water system of private wells.



For about 10 years, the Fisher-Calo Chemical and Solvent Company accepted metals and industrial sludges from area manufacturers. Poor waste management practices led to improper mixing of chemicals, stockpiled drums, and frequent spills. Little information exists on worker exposure, but the diversity of toxic substances handled suggests that employees were mostly untrained and unaware of the dangers.

The site ground water was contaminated with trichloroethylene (TCE) and a variety of volatile organic compounds (VOCs). Site soil contains polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), and a wide array of heavy metals.

Explosion and Fire Signal Need for Comprehensive Cleanup

Industrial Park Attracts Chemical Companies

During World War II, the Kingsbury Ordnance Plant manufactured shells, cartridges, and mortar rounds. The Department of Defense decommissioned the plant in the early 1960s. A private developer subdivided the property to form the Kingsbury Industrial Development Park. Fisher-Calo Chemical and Solvent Company leased space at the park and began operating in the late 1960s.

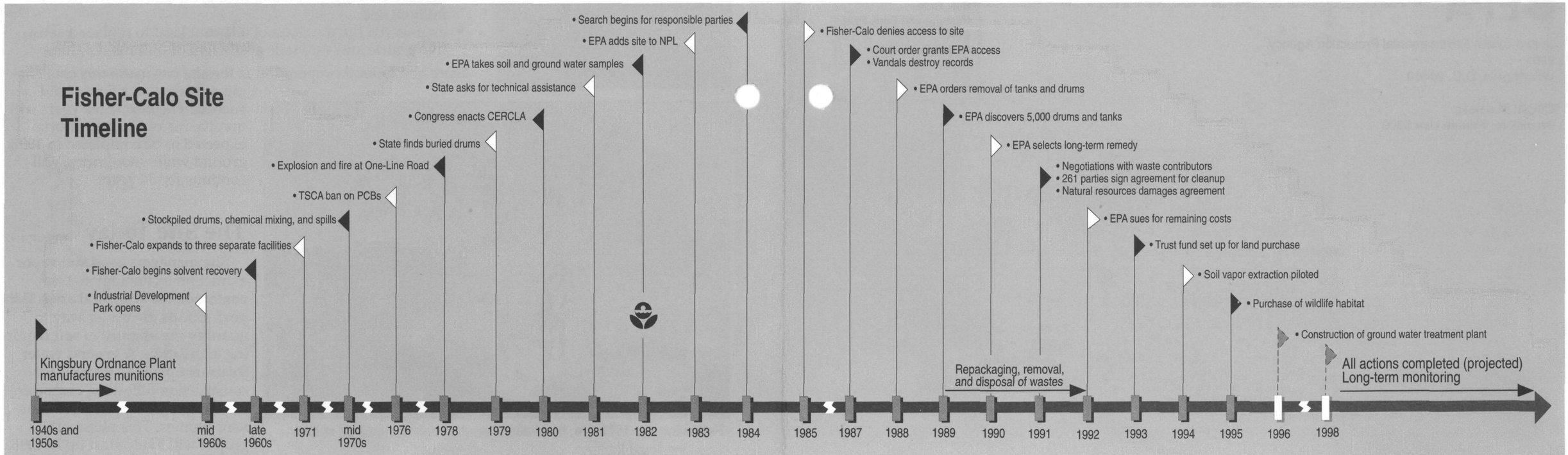
In 1971, the company purchased 250 acres from the developer and expanded operations to three separate areas identified as One-Line Road, Two-Line Road, and Space Leasing. Three subsidiaries — Midwest Chlorine, Midwest Ammonia, and Wallace Warehouse — leased building space from Fisher-Calo in old Army buildings on the site. The group produced sodium hypochlorite, recovered metal and paint cleaning solvents, and packaged sulfur dioxide, chlorine, and ammonia. These operations continue today under different company names.

No Obvious Waste Management Employed

Area manufacturers sent cyanide, acid, and metal plating wastes to the site which Fisher-Calo stored in 55-gallon drums. Solvent recovery took place at the One-Line Road facility but workers were apparently overwhelmed; thousands of drums in various states of deterioration were buried or stockpiled around the facility. Some hazardous wastes were simply dumped on the ground.

In 1978, an explosion and fire at the facility sent plumes of noxious smoke into the air, forcing residents within a five-mile radius to evacuate their homes. The fire was of suspicious origin and destroyed equipment, several large storage tanks, and an estimated 20,000 surface drums of chemical waste. The incident raged in the headlines for days, prompt

Fisher-Calo Site Timeline



ing a state investigation that estimated hundreds more buried drums. After the fire, Fisher-Calo moved operations to the nearby Two-Line Road facility. In 1979 and 1980, the Indiana State Board of Health removed some of the drums but discovered additional waste disposal areas far exceeding anyone's original estimate.

That December, Congress had enacted the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) authorizing a hazardous waste cleanup program nationwide. Instead of using taxpayer dollars, EPA conducts site activities with a "Superfund" derived from excise taxes on chemical feedstocks and crude oil. EPA can remediate abandoned sites but makes every effort to locate and negotiate cleanup by responsible parties.

In 1981, the state requested technical assistance from EPA's Chicago, Illinois office. Soil and ground water samples contained high levels of organic compounds that were causing serious environmental damage. In 1983, EPA placed Fisher-Calo on the National Priorities List (NPL), a roster of uncontrolled or abandoned hazardous waste sites requiring comprehensive cleanup. A search for responsible parties commenced in 1984 that eventually found almost 300 generators and transporters who had sent various wastes to the site.

Legal Battle and Vandalism Cause Delays

Field investigations came to a halt in 1985 when company officials refused to allow EPA onto the site. A series of legal challenges ensued over the next two years, but EPA ultimately gained access to the property following a federal court order.

No taxpayer dollars are in the "Superfund"

While evidence gathering was under way, vandals trespassed onto the site during the summer of 1987, burning a trailer containing EPA records, field investigation equipment, and sampling data. Although EPA was able to reproduce most of the lost information, this setback took another two years.

Emergency Actions Reduce Immediate Threats

By December 1988, EPA had mapped out three specific areas of the site where ground water was highly contaminated with chlorinated compounds and paint solvents. (A fourth area was located in 1994.) Over the years, seasonal precipitation had spread various toxic solvents and acids from abandoned and deteriorating drums. To prevent further environmental degradation, EPA issued a unilateral administrative order to 14 responsible parties, directing them to remove all drums and tanks from the site. The order was amended several times as new parties were identified.

Between February and July 1989, investigators discovered almost 5,000 drums and 65 storage tanks containing solvents and acids. Crews erected a fence around portions of the site to discourage trespassers and prevent direct exposure. For the next three years, EPA supervised the repackaging, removal, and disposal of hazardous wastes as well as visibly contaminated soil. EPA also collected soil samples and surveyed beneath the site, detecting PCBs in three of seven excavation areas. Friable asbestos was a concern in abandoned buildings as well as other illegally dumped materials, including construction debris.

Comprehensive Plan Relies on Emerging Technologies

Based on the complexity of cleanup objectives, EPA evaluated an array of alternatives and selected a comprehensive plan that included many treatment technologies that had been developed during the early days of CERCLA and applied successfully at other sites:

- excavation and thermal treatment of soil contaminated with semi-volatile compounds and PCBs;
- treatment of VOC-contaminated soil using flushing or vapor extraction techniques; and
- extraction and treatment of contaminated ground water by means of air stripping and carbon filtration.

In addition, one of the wells for the Kingsbury Industrial Development Park was contaminated with TCE and would have to be grouted shut and another well drilled in an uncontaminated area.

EPA announced the preferred remedy at a public meeting in LaPorte in April, 1990. The meeting and ensuing 60-day public comment period brought out community concerns which EPA incorporated into the final proposed plan.

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A State Success: Natural Resources Given a Second Chance

Kingsbury, Indiana is located in biologically diverse prairie and wetlands that used to cover the top third of the state. At one time, lush meadows harbored populations of mink, foxes, and various reptiles. Metropolitan growth and monocultured farms put many indigenous species in jeopardy. The state was forced to add the Franklin ground squirrel, the Indiana bat, the upland sandpiper, the black tern, the yellow-headed blackbird, and the least bittern to the list of species endangered from habitat destruction.

The Fisher-Calo site contributed to the environmental degradation in silent, insidious ways. Of all the chemicals present at the Fisher Calo site, the Indiana Department of Natural Resources (IDNR) and the U.S. Fish and Wildlife Service found PCBs to be the most environmentally destructive. Scientific studies have shown that PCBs are unusually persistent and bioaccumulate in all species of the food chain. In addition to central nervous system disorders, PCBs are suspected carcinogens and mutagens. Even though the Toxic Substances Control Act of 1976 (TSCA) banned the manufacture, distribution, and use of PCBs, nearly everyone has some internal level of this chemical.

The soil excavation work planned would irreparably damage the site's ability to support wildlife. One alternative was to acquire and convert approximately 150 acres near the site for addition to the Kingsbury Fish and Wildlife Area. A remnant of the old Kingsbury Ordnance Plant, more than 5,000 acres were deeded to the State of Indiana in 1965. Bordered on the south by the Kankakee River, the wildlife area is a small portion of the original Grand Kankakee Marsh which once covered 750,000 acres.

The 261 cooperating parties agreed to pay $200,000 to the state and $20,000 to the U.S. Department of the Interior to replace lost wildlife habitat. The state Division of Fish and Wildlife is working on a land acquisition to support the Franklin ground squirrel. Taking title to the land is planned before the end of this year; the parcel of land will become a "satellite" for the Kingsbury Fish and Wildlife Area.

Photo by Phil Norton, U.S. Fish & Wildlife Service

A **yellow-headed blackbird** feeds her young.

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Enforcement Yields Results

Between 1988 and 1991, EPA issued unilateral administrative orders to numerous parties, directing them to remove drums and tanks of waste for disposal at approved off-site facilities. In addition, EPA negotiated an agreement with 261 parties, both major and *de minimis* (small volume) waste contributors, to conduct the comprehensive cleanup of soil and ground water.

Finalized in October 1991 and valued at over $30 million, the agreement represented approximately 95% of total site cleanup costs, including $3 million in EPA's past costs. The following year, EPA sued the remaining, non-settling parties to recover another $1.6 million in outstanding costs. Negotiations are ongoing.

Success at Fisher-Calo

Failed efforts at solvent recovery in the early 1970s led to the stockpiling of barrels and tanks containing toxic wastes. A major fire alerted state and federal investigators who found thousands more drums buried in saturated soil. Snowmelt and rainfall led to the formation of four distinct plumes of contaminated ground water. Blocked access and vandalized records didn't stop efforts to clean up the environment. Many years went into removal operations and characterization studies to develop a comprehensive restoration plan.

Effective enforcement laid the foundation for settlement documents in which 261 parties have agreed to cooperate on cleaning up the soil and ground water. Construction activities at the site are scheduled for completion in 1998; long-term monitoring will continue for 30 years.

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